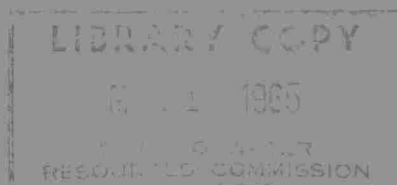


THE  
ONTARIO WATER RESOURCES  
COMMISSION  
WATER POLLUTION SURVEY  
OF THE  
TOWN OF SOUTHAMPTON

1964



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R E P O R T

ON

WATER POLLUTION SURVEY

TOWN OF SOUTHAMPTON

BY

October 1964.

ONTARIO WATER RESOURCES COMMISSION

# R E P O R T

## INTRODUCTION

The purpose of this survey was to determine the nature and extent of domestic and industrial sources of pollution within the Town of Southampton upon surface and ground waters. Such surveys are carried out routinely and upon request throughout the Province by Sanitary Engineering Division of the Commission.

The field work for this survey was carried out on June 25 and October 1, 1964 with the assistance of the staff of the Bruce County Health Unit whose co-operation is gratefully acknowledged.

All samples taken during the survey were submitted to the OWRC laboratory in Toronto for analyses.

## I GENERAL INFORMATION

The Town of Southampton is located on the shores of Lake Huron in the County of Bruce. The Saugeen River, draining a water shed of 1600 square miles empties into the lake in the north section of the town.

Soil conditions in the town vary from sand along the shoreline to a sandy loam in the higher portions. The land drains to both the lake and to the river.

Southampton's population is listed in the 1964 Municipal Directory as 1,811. Its economy is based largely on tourism with over 300 listed tourist accommodations in the town. Two furniture factories and a number of small fisheries are also important factors in the town's economy. The total taxable assessment is slightly in excess of \$ 2,000,000.00.

## II WATER USES

### 1. Municipal Water Supply

A municipal water system supplies almost the entire population, with not more than six individual well supplies still in use.

Water for the town supply is drawn from two infiltration wells at the shore of Lake Huron. At times of high demand, the wells are replenished by water taken directly from the lake through a 1200 foot intake pipe.

Chlorination is the only treatment provided. The average daily pumpage in summer is 450,000 gallons and in winter, 240,000 gallons.

The quality of both raw and treated water has been a persistent problem for some time. The raw water supply has regularly shown a high turbidity factor which makes effective chlorination difficult. These problems have been recognized by the local officials and tenders have been called for construction of a new intake pipe and treatment plant with an anticipated cost in excess of \$ 260,000.00.

### 2. Recreational Uses

The Town of Southampton has one of the finest sand beaches in Ontario. One and one-half miles in length, it has a municipal bathing area in the centre of town and cottage developments

and resorts to the north and south. As will be noted, however, the safe use of these beaches for bathing is hampered by the large volume of polluting wastes discharged to the lake from municipal sewers.

Both the lake and the Saugeen River are used extensively for boating and fishing. The lake in particular supports a moderate sized commercial fishing industry.

Fairy Lake, a spring-fed lake of approximately 9 acres, located in the centre of the town, forms part of a municipal park. A heavy algae growth makes the lake waters unsuitable for bathing. The lake is drained by a creek to the Saugeen River.

### III WATER POLLUTION

#### 1. Sanitary Waste Disposal

##### (a) Existing Conditions

There are no municipal sewage works. Private disposal of domestic and industrial wastes would therefore be presumed to include septic tanks and cesspools and in the favourable soil conditions, these should operate well.

However, a network of storm sewers, and ditches designed solely for removal of surface drainage, now appears to function as combined sewer system. Five such drains were located and the analyses of samples of effluent taken during this survey, confirm the extent to which domestic and industrial wastes are reaching the storm drains. Other drain outlets are known to discharge similar

wastes during the busy summer months but were dry at the time of the second sampling (see sample #6).

Four of the drains sampled discharge to the beach areas. Pollution surveys of these beaches by the Bruce County Health Unit were carried out on three occasions during the past summer. Of 72 samples taken, 22% contained more than 2400 coliform organisms per 100 ml. and 56% contained the E. Coliform type. (For interpretation of these results see later section). It can safely be concluded that pollution from the municipal sewers renders the beaches unfit for bathing purposes in accordance with generally accepted standards for swimming areas.

From previous OWRC reports, and from information available from the county health unit, a number of establishments are definitely known to be discharging domestic and/or industrial wastes to the various drains. In the majority of cases, the lack of space available for a proper disposal system has led to the premises being connected to the municipal storm sewer system.

#### (b) Proposed Sewage Works

In 1954, municipal officials received from R. V. Anderson and Associates, Consulting Engineers, a report on sewage works requirements.

Approval for the necessary expenditures was sought by plebiscite in 1955. With rejection by the residents, no further action was taken until 1963, when the consulting engineer was asked

to bring the previous report (1954) up-to-date. The revised report, dated November, 1963 outlines a system of sanitary sewers, pumping station and 20 acre lagoon at an approximate cost of \$ 400,000.00.

Since the town has now committed itself to a large expenditure for an improved water supply, any consideration of sewage requirements has been deferred until such time as the necessary funds become available. Town officials anticipate a start on the programme in two years time.

## 2. Refuse Disposal

A municipal refuse disposal site is operated by the town in Saugeen Township, south-east of the town. Pollution of adjacent watercourses and ground waters is not a problem.

## 3. Industrial Waste Disposal

### (a) Fitton Parker Furniture Limited

This firm manufactures wooden furniture items the production of which presents no appreciable problem with process wastes.

Domestic wastes, however, reach the Morpeth Street storm sewer.

### (b) Hepworth Furniture Company Limited

As with the Fitton Parker firm, industrial wastes are of no significant concern. Here again, domestic wastes reach the Morpeth Street sewer.



(c) Southampton Dairy Limited

This is a small local dairy with a peak volume (in August) of 1600 lbs. of raw milk processed per day. All wastes, except domestic, are discharged to the Lansdowne Street sewer.

Note: As of November 30th, this operation had been closed.

(d) Fisheries

There are three small fisheries located on the banks of the Saugeen River just upstream from its outlet to Lake Huron. While this survey found no evidence of pollution from these establishments, it should be noted that complaints concerning the dumping of fish offal in the river, have been received by the Commission. The normal practise is to dispose of wastes in deep water, well off shore in Lake Huron.

(e) Miscellaneous

The 25 bed Saugeen Memorial Hospital on High Street is known to have a septic tank disposal system which has an overflow drain to Fairy Lake. Pollution of the lake from this source, is evidenced by the heavy algae growth.

Finally, the OWRC and health unit records indicate that the majority of the commercial establishments in the downtown section discharge domestic wastes to the storm sewer system either directly, or through septic tank overflows.

#### 4. Discussion of Sample Analyses

Samples of the effluent from each of the municipal drains, as well as two samples from Fairy Lake, were submitted to the OWRC laboratory for chemical and bacteriological analyses. The results of these analyses are appended to this report. For the location of sampling points, refer to the map attached.

##### Interpretation of Results

##### Biological Oxygen Demand - B.O.D.

The Biological Oxygen Demand is an indication of the amount of oxygen required to stabilize the decomposable organic matter present. The OWRC objectives in natural waters and in waste discharges are 4.0 and 15.0 ppm. respectively.

##### Coliform Organisms (and E. Coliform)

The coliform organism count as reported indicates the number present per 100 ml. of sample. The coliform is an organism generally found in the intestinal tract of humans and other warm-blooded animals and as such is used as an indicator of domestic pollution. The objective for natural waters and bathing areas is not more than 2400 organisms per 100 ml.

The presence of the E. Coliform type in any amount is an almost certain indication of pollution from a human faecal source.

### Discussion

The results of laboratory analyses indicate the presence of domestic sewage in the samples of effluent from each of the sewers or drains. Of particular note, are the samples from the High Street, Morpeth Street and Lansdowne Street sewers, and from the creek at the south end of Huron Street. The first drains to Fairy Lake and the latter three discharge onto bathing beaches. It should be noted, that the samples taken from Fairy Lake reflect not only pollution by domestic sewage, but the heavy algae growth as well.

### IV SUMMARY AND CONCLUSIONS

A pollution survey was carried out on June 25 and October 1, 1964, in an effort to determine the nature and extent of industrial and domestic pollution in the Town of Southampton.

From observations made, and from the results of laboratory analyses on samples of effluent from sewers and ditches, it is apparent that domestic and industrial wastes are being discharged to the municipal sewer system in considerable volume. The discharge of such wastes results in pollution of bathing areas along the Lake Huron shoreline in the vicinity of the town.

Conditions have reached a point where a complete system of sanitary sewers and a sewage treatment plant or waste stabilization pond will be the only satisfactory method of

preventing continuing pollution. Such a system has been proposed by the consulting engineer employed by the town, but financial limitations have delayed action by the town council in implementing the proposal.

V RECOMMENDATIONS

It is recommended that:-

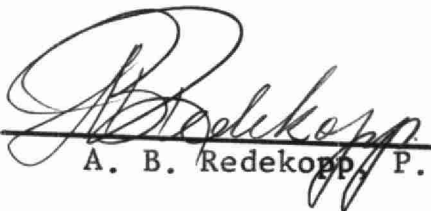
1. The Southampton Council give urgent consideration to implementing the proposed sewage works programme at the earliest opportunity.
2. Control be exercised over new construction to insure that pollution problems are not aggravated by improper connections to the storm sewer system.

Prepared by:-

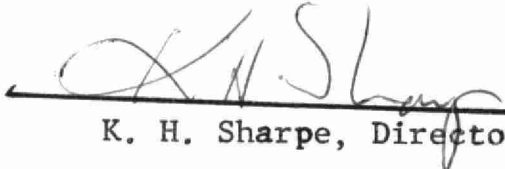
C. Letman, C.S.I.(c).

All of which is respectfully submitted,

District Engineer:-

  
A. B. Redekopp, P. Eng.

Approved by:-

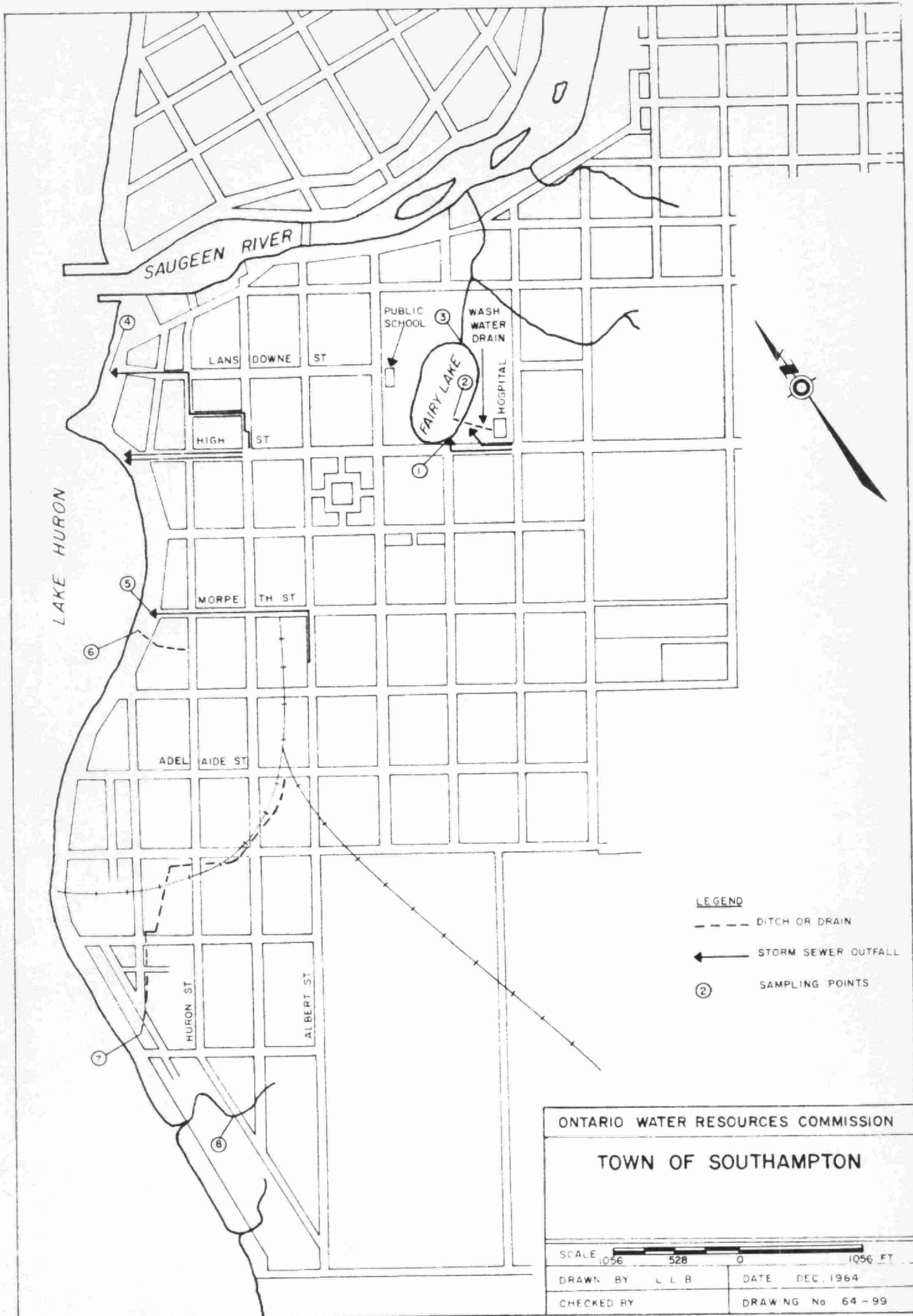
  
K. H. Sharpe, Director.

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TABLE I  
TOWN OF SOUTHAMPTON  
Municipal Drains

<u>Lab. No.</u>	<u>Location</u>	<u>5-Day B.O.D.</u>	<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	<u>Coliforms per 100 ml.</u>	<u>Estimated Flow</u>
1.	High St. sewer at Breadalbane Street	A 80	728	92	636	9,100,000	-
		B 1.4	444	1	433	2,300	30 G.P.H.
2.	Fairy Lake - Near submerged hospital drain.	A 27	276	46	230	6	-
		B 18	318	58	260	800	-
3.	Fairy Lake - at outlet	A -	-	-	-	-	-
		B 21	370	102	268	400	-
4.	Storm sewer - Foot of Lansdowne St.	A 4.8	252	3	249	170,000	-
		B 22	458	103	355	40	200 G.P.H.
5.	Storm sewer - Foot of Morpeth St.	A 4.8	388	1	387	90,000	-
		B 5.3	378	3	375	54,000	2000 G.P.H.
6.	Private Drain Outlet-S. of Morpeth Street	A 3.2	768	256	512	410,000	-
7.	Storm sewer - rear of Redwing Cottages - #87	A 1.2	312	8	304	800	-
		B 2.5	468	21	447	800	1000 G.P.H.
8.	Creek - S. End of Huron St.	A 1.1	432	1	431	1,170	-
		B 1.6	542	1	541	2,200	200 G.P.H.

Note: A. - June 25, 1964  
B. - Oct. 1, 1964.



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